THE INSTITUTE OF PHYSICS

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BULLETIN

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REPORT OF THE BOARD OF THE INSTITUTE OF PHYSICS FOR THE YEAR 1951

To be presented for adoption at the Annual General Meeting of the Institute on 5th June, 1952.

The Board and its Committees

The present Board took office on October 1, 1951; its Members are:

President: Prof. W. E. Curtis.

Past Presidents: Dr. F. C. Toy, Prof. A. M. Tyndall.

Vice-Presidents: Dr. T. E. Allibone, Prof. E. G. Cox, Dr. J. Topping, Dr. S. Whitehead.

Honorary Treasurer: Mr. E. R. Davies.

Honorary Secretary: Dr. B. P. Dudding.

Ordinary Members of the Board: Mr. J. H. Awbery, Dr. F. P. Bowden succeeded by Mr. R. G. Wood, Mr. O. W. Humphreys, Mr. T. C. Keeley, Mr. G. R. Noakes, Dr. H. L. Penman, Prof. S. H. Piper, Mr. E. W. H. Selwyn.

Chairman of Branches in Great Britain: Dr. A. J. Maddock (London and Home Counties), Mr. W. J. Meredith (Manchester and District), Dr. D. Parkinson succeeded by Dr. T. L. Ibbs (Midland), Mr. H. G. Yates (North Eastern), Prof. J. S. Rankin (Scottish), Dr. T. V. I. Starkey (South Wales).

Appointed by Participating Societies: Mr. W. A. Langmead succeeded by Dr. L. H. S. Clark (British Institute of Radiology), Dr. A. B. Wood and Mr. C. G. Wynne (Physical Society), Dr. H. W. Thompson succeeded by Mr. F. I. G. Rawlins (Faraday Society), Dr. G. D. Robinson (Royal Meteorological Society).

The Board and Committees

During the year the Board met six times and appointed the undermentioned Standing Committees which held nineteen meetings.

	Chairmen
Finance and General Purposes Committee	The Honorary Treasurer
Membership Committee	Dr. J. Topping
Education Committee	Prof. F. Llewellyn Jones succeeded by Dr. T. L. Ibbs
Benevolent Fund Committee	The Honorary Treasurer
Publications Policy Committee	The President
House Committee	The Honorary Treasurer
Advisory Committee of the British Journal of Applied Physics	The President
Advisory Committee of the Journal of Scientific Instruments	Dr. R. S. Clay succeeded by Mr. F. Twyman

Representatives on Joint Committees and other Bodies

The Institute has been represented as follows:

On the Royal Society's National Committee for Physics: Mr. J. H. Awbery.

On the Royal Society's National Committee for Crystallography: Prof. E. G. Cox.

On the Royal Society's Paul Instrument Fund Committee: Sir Frank Smith.

On the Joint Council of Professional Scientists: The President, Dr. H. R. Lang and Dr. S. Whitehead.

On the Parliamentary and Scientific Committee: Dr. B. P. Dudding and Dr. H. R. Lang on the General Committee, together with Mr. W. A. Langmead and Dr. A. J. Maddock at the Annual Meeting.

On the City and Guilds of London Institute's Advisory Committee on the Education and Training of Laboratory Technicians: Mr. N. Clarke, Dr. R. S. Clay and Mr. L. Walden.

On the City and Guilds of London Institute's Advisory Committee on the Training of Instrument Mechanics and Technicians: Mr. N. Clarke.

On the Provisional National Joint Body on the Recruitment and Training of Laboratory Technicians: Mr. N. Clarke.

On the Joint Committee with the Ministry of Education for National Certificates in Applied Physics: Dr. B. P. Dudding, Mr. E. W. H. Selwyn, Dr. J. Thomson and Dr. J. Topping.

On the Joint Committee with the Scottish Education Department for National Certificates in Applied Physics: Prof. P. I. Dee, Dr. R. S. Silver and Dr. A. G. White.

On the Joint Library Committee with the Physical Society: Mr. L. V. Chilton, Mr. N. Clarke, Dr. J. S. Forrest, Mr. N. L. Harris, Mr. F. I. G. Rawlins, Dr. G. D. Robinson and Mr. E. W. H. Selwyn.

On the British Committee for Radiological Units: Mr. W. Binks.

On the Joint Committee for Chemical Analysis by X-ray Diffraction Methods: Prof. W. P. Davey.

On the Physics and Mathematics Advisory Committee of the Technical and Scientific Register of the Ministry of Labour: The President and Dr. H. R. Lang.

On the London and Home Counties Regional Advisory Council for Higher Technological Education: Mr. F. Twyman.

On the London Regional Advisory Committee on Applied Physics: Mr. N. Clarke, Mr. F. Y. Poynton and Mr. G. W. Warren.

On the Governing Body of Norwood Technical College: Mr. M. W. Thring.

On the Sub-Committee on Specialist Courses in Electrical Engineering of the Welsh Academic Board of Technology: Mr. W. S. Vernon.

On the Applied Science Advisory Committee of the Royal Technical College, Salford: Mr. D. A. Crooks.

On the Advisory Committee of the Ipswich School of Technology: Mr. H. A. Nancarrow.

On the Science Advisory Committee of Blackburn Technical College: Dr. A. Hargreaves.

On the Science Advisory Committee of Bury Municipal Technical College: Dr. G. D. Rochester.

On the East Anglian Regional Advisory Council for Further Education: Mr. H. A. Nancarrow.

British Standards Institution: The Institute has been represented on a number of technical committees and sub-committees of the B.S.I.

The Register

TABLE I.—THE ROLL OF THE INSTITUTE

	Total on Dec. 31, 1950	CHANGES DURING 1951								*Total on Dec. 31, 1951*
		New	*Transfers to*	*Readmitted*	*Resigned*	*Deceased*	*Removed*	*Transfers from*	*Net Inc. or decrease*	
Honorary Fellows	4	—	—	—	—	—	—	—	—	4
Fellows	891	9	19	—	3	11	4	1	+ 9	900
Associates	1 478	68	18	—	8	5	6	19	+ 48	1 526
Graduates	283	101	94	—	1	—	1	9	+ 184	467
Companions	—	—	—	—	—	—	—	—	—	—
Subscribers	471	29	1	—	24	3	13	2	− 12	459
Students	731	162	—	6	29	1	44	101	− 7	724
Total	3 858	369	132	6	65	20	68	132	+ 222	4 080

Deaths.—The Board records with regret the deaths reported in 1951 of:—

Fellows: G. H. Baillie, C. H. S. Evans, A. W. Ferguson, A. L. Green, L. G. Grimmett, C. Johns, A. W. Lay, E. P. Metcalfe, C. W. Ockelford, H. S. Rowell, G. W. Stubbings. *Associates:* W. E. W. Baker, M. Barbanel, M. M. Nicolson, F. W. Osborne, J. P. Reed *Subscribers:* A. S. Lippmann, H. C. Wilson, T. M. Wylie. *Student:* H. Lund.

Membership Committee

During the year the Committee received 524 applications for election or transfer to the various grades, compared with 627 applications in 1950. The numbers for the grades (1950 figures being given in brackets) were: Fellows 37 (36), Associates 108 (131), Graduates 208 (213), Students 146 (204) and Subscribers 25 (43).

During the year the Examining panel met three times and interviewed nine candidates.

On the Committee's recommendation the Board modified the interpretation of the regulations governing election to Associateship so as to permit the admission of candidates whose training in physics is adequate but who may have graduated in subjects other than physics.

Representatives of the Committee visited nine Technical Colleges which had applied for recognition, or for an extension of recognition, as institutions approved by the Institute for the education and training of physicists.

General Meeting

The 31st Annual General Meeting of the Institute was held on 16th July in the Institute's House.

Education

Graduateship Examination.—The regulations and syllabuses of the new Graduateship examination were published during the year, and aroused wide interest. There has been a heavy demand for these particulars and the number of candidates entered for the first examination, in 1952, is greater than was expected.

National Certificates in Applied Physics.—The numbers of candidates in Great Britain taking the 1951 examinations for National Certificates in Applied Physics were as follows (1950 figures are given in brackets): At the Ordinary stage 111 (74) candidates were entered from 12 colleges; 29 (6) from 5 colleges took the examination at the Higher stage. 59 (44) Ordinary Certificates were awarded and 23 (4) Higher Certificates. The Institute's Assessors were:

England and Wales: Mr. G. R. Noakes, Dr. J. Topping and Mr. G. W. Warren. Scotland: Mr. L. W. Magson.

In September, invited representatives of employers, the Ministry of Education and technical colleges took part in a small conference on National Certificates in Applied Physics in the Institute's House. The Assessors commented on the standard reached in the examinations; papers were read by Dr. W. Hirst and Dr. J. Topping. Shortened versions of these papers were printed in the November *Bulletin*.

New Education Report.—The Education Committee began the consideration of a new report on the education of physicists. A report on this subject was published by the Institute in 1943 and included recommendations on educational policy. Changed circumstances have made that report out of date. The Committee has now drafted a practical and authoritative guide to the facilities available in the Universities and technical colleges for education in physics. Such a publication will satisfy the steady demand for information which reaches the Institute. Later it is proposed to publish a second report dealing with educational policy.

M.K.S. system of units.—The Board has published its views on the extent to which the M.K.S. system of units should be used by teachers of physics. While unwilling to give a definite lead at present the Board believed that there were weighty considerations in favour of the rationalized M.K.S. system of electrical units and that steps should be taken to set up a Committee representing the Physical Society, The Science Masters' Association and the Institute to give formal consideration to the matter. Further, the Board strongly supported a suggestion of the Science Masters' Association that examination papers at matriculation level should contain questions that could be answered by those trained on rationalized M.K.S. lines as alternatives to questions that require a knowledge of c.g.s. electromagnetic and electrostatic units.

Training courses for Industrial Radiographers.—On the recommendation of the Committee of the Industrial Radiography Group, the Board proposed to the City and Guilds of London Institute that consideration be given to the setting up of an exploratory committee to investigate the need for courses and examinations in industrial radiography. This proposal has been agreed and a Committee is to be set up.

Laboratory Arts Certificates.—Examinations for the Institute's Laboratory Arts Certificate were held at two Colleges. The Institute had announced in 1950 that 1951 would be the last year in which candidates would be examined for this Certificate, in view of the establishment of a Laboratory Technicians Certificate by the City and Guilds of London Institute. In the opinion of the Board the regulations and syllabuses for the new Certificate were very satisfactory.

The Board records its thanks to the teachers who have prepared candidates for the Institute's Laboratory Arts Certificates; it also records its appreciation of the work of Dr. R. S. Clay and Dr. B. L. Worsnop who have been the Institute's Assessors for many years.

Publications

Policy.—The policy laid down by the Board in 1949 that the Institute should considerably increase the volume of its publications was developed further during the year, as will be seen from the paragraphs below. The development was, however, somewhat restricted by printing and other delays and by the limited capital available for this work. Indeed, the rapid rise in the cost of paper, printing and overheads has given the Board considerable anxiety throughout the year. To help to meet these rising costs, the price of the annual volume of each journal was raised from £3 to £4. Various economies, such as the use of a slightly smaller type, were decided upon on the advice of the individual Journal and publications committees. These will become fully effective in 1952.

The Journals and Supplements.—The *Journal of Scientific Instruments* continued to prosper and its circulation to increase both to members and non-members. The *British Journal of Applied Physics* in its second year attracted papers from abroad and became better established and known. Its circulation, both to members and non-members, continued to increase satisfactorily during the year. For a newly-established journal, its progress is considered very satisfactory, and the Board hopes that members will do what they can to make it even more widely known and read.

In the following figures (which exclude the Supplements—see below) the first number refers to the *Journal of Scientific Instruments* and the second to the *British Journal of Applied Physics*. The 1951 volumes each consisted of the usual twelve parts issued monthly and comprised 388 + 370 = 758 pages compared with the previous year's 354 + 340 = 694 pages. 210 + 83 = 293 papers were submitted of which 160 + 80 = 240 were considered for this section compared with 123 + 63 = 186 the previous year; the others were considered as items of correspondence or laboratory notes. 112 + 60 = 172 papers were accepted, 90 + 50 = 140 after modification to meet referees' criticisms. Eighty-eight laboratory and workshop notes were submitted compared with 60 the previous year; 67 of these were accepted, 37 of which had first to be modified. 6 + 12 = 18 specially invited articles or reports were included in the volumes, most of them being based on lectures of symposia arranged by the Institute's groups and branches. Descriptions of 28 new instruments and tools recently put on the market were published and notices of 64 catalogues and booklets issued by instrument makers were given. Reviews or notices of 20 + 73 = 93 new books were included in the volumes.

The first supplement to the *British Journal of Applied Physics* entitled "Physics of Lubrication" contained the papers and discussion on them given at a symposium held jointly by the British Rheologists' Club and the Manchester and District Branch of the Institute in Manchester from June 29 to July 1, 1950. This supplement ran to 96 pages; it was issued without extra charge in paper covers as part of the 1951 volume of that Journal, and in stiff boards separately at 15s. net. It was very well received and had excellent review in the technical press of the world.

The first supplement to the *Journal of Scientific Instruments* entitled "Vacuum Physics" contained the papers and discussion on them given at a symposium held by the Midland Branch of the Institute in Birmingham on June 27 and 28, 1950. This supplement ran to 80 pages and was distributed in the same way as the supplement to the other Journal.

The Board wishes to place on record its thanks to all those who have assisted the Editor by acting as referees and in advising him on various matters, and to those who have reviewed books.

Both the Institute's Journals are now printed by Unwin Brothers Ltd., and the Board wishes to record its appreciation of the high standard which they have maintained and their willing and helpful co-operation with the Editor and his staff in these difficult days.

Bulletin.—The twelve monthly issues contained 88 pages (compared with 68 in 1950). In addition to notices of meetings and professional announcements, several short articles and summaries of lectures were published. A series of photographs and short biographical notes of Members of Note was begun, and reviews of books of general interest were included. There was a heavy demand from employers for space to announce vacancies for physicists. 147 advertisements of such vacancies were printed (compared with 100 in 1950) and the advertisement revenue covered more than half the cost of printing the *Bulletin*.

"*Physics in Industry*" *Monograph Series.*—Mr. L. Rotherham's *Creep of Metals* which had been specially commissioned, was published in April 1951, and received most favourable comments. The initial demand for it was satisfactory and sales are continuing very well.

The script of Professor N. F. Astbury's *Industrial Magnetic Testing* was sent to press towards the end of the year; this monograph will be published early in 1952. The script of *Metallurgical Equilibrium Diagrams* by Dr. W. Hume-Rothery, Mr. J. W. Christian and Mr. W. B. Pearson was also received and sent to press.

Other Books.—During the year a volume entitled *Some Aspects of Fluid Flow* was published for the Institute by Messrs. Edward Arnold & Co. This contained the papers presented at a conference organized by the Institute in October 1950 and reports of the conference discussion groups. This firm also published *Bibliography on Electron Microscopy* which had been edited by Dr. V. E. Cosslett and was based on the centralized bibliography prepared by the Institute's Electron Microscopy Group.

A further selection of laboratory and workshop notes from the *Journal of Scientific Instruments*, which had been prepared and edited by Dr. Ruth Lang on the Board's invitation was also published by Messrs. Edward Arnold & Co. for the Institute during the year. As with the first selection, the royalties from this volume are credited to the Institute's Benevolent Fund.

The Institute's agreement to the Declaration regarding "Fair copying," for the personal use of scientists and others, of items from its publications, was renewed. This makes it unnecessary for photocopying services to seek authority to provide copies each time they receive such a request.

Monographs for Students.—On the recommendation of its Education Committee, the Board decided to sponsor a series

of small books suitable for students studying for the National Certificates in Applied Physics. Each was to cover some part of the course. The script of the first of these entitled *Soft Magnetic Materials used in Industry*, written by Mr. A. E. de Barr, was received during the year. Others have been commissioned and it is hoped to launch the series early in 1952.

Professional Matters

Salary Statistics.—The Report on the survey of salaries and emoluments paid to Fellows and Associates resident in Great Britain and Northern Ireland was published in the June issue of the *Bulletin*. Reprints were widely distributed and many requests for additional copies were received from employers and others. The data were analysed by the Honorary Secretary and Deputy Secretary and compared with the 1948 data. It is understood that the Report has been of considerable assistance in determining revision of salaries where these had been under consideration.

Contracts of Service.—A set of notes on terms of engagement for physicists was published in the *Bulletin* in July after approval by the Board; an addendum concerning patent rights written by Mr. F. W. G. Greener was published in the September issue. The notes concern such items as patent rights, conditions under which consulting work may be undertaken, length of notice required and annual leave, and were based on the notes prepared by a joint committee of chemical bodies which had been previously published by the Royal Institute of Chemistry. Reprints were made available and are in constant demand.

Supply and demand for physicists.—During the year the Board had before it reports from the Ministry of Labour on the supply of and demand for physicists, from which it appeared that, at present, the demand is very much greater than the supply but that the position might change in the course of the next few years. The development of the rearmament programme was aggravating the present situation and, as it was understood that the Government had already set up special committees to look into the matter and there were so many unknown factors, the Board decided not to proceed with its own inquiries. Its representatives on the Advisory Committee of the Technical and Scientific Register of the Ministry of Labour have been requested to keep the Board informed on this matter.

Panel of Consultants.—Since 1922 it has been the practice to invite all newly elected Fellows and Associates to add their names to the panel of specialists available for consultation on a professional basis. The requests received by the Institute for consultants have been very few and the Board considered it better for the Officers to deal with these in consultation with senior Members, rather than by reference to the paper information on the panel forms. Accordingly, the old arrangement was terminated at the beginning of the year.

Part-time employment of retired members.—In January the Board received a report on the need to try to assist some of the Institute's older members who had retired under the rules of their employing organizations, but who were still able and indeed anxious to use their knowledge and experience. The April *Bulletin* contained an invitation to Fellows who might be in a position to offer consulting or other part-time work to communicate with the Secretary; unfortunately, the response was very small.

Scientists' rights of travel.—The Board considered complaints about difficulties and delays experienced by some of its members in obtaining visas to visit foreign countries. It decided that the Board was not in a position to assess the suitability or otherwise of any of its members to visit any particular country.

On the advice of the Science Attaché of the United States Embassy in London, a notice was circulated in the *Bulletin* advising members travelling to the United States to apply for visas at least three months before they expected to travel.

Appointments.—For the second year vacancies for physicists were included in the monthly *Bulletin* instead of being circulated to those requesting them.

The Institute and the Ministries

The honorary and permanent officers have continued their close contact with senior officials of various Ministries, and the Board wishes to record its appreciation of the co-operation of these officials and its desire to continue to assist them with information and advice on request.

The Institute's House

During the year it became urgently necessary to carry out extensive repairs to some parts of the House, which had suffered war damage, in order to prevent further deterioration. Only the bare essentials have been done and still further expense will have to be incurred before this part of the premises can be used. The increasing cost of maintenance of the House in a reasonable state of repair and decoration, both inside and out, is being closely watched by the Finance Committee and economy practised wherever possible.

The number of meetings held in the House during the year compared with the previous year (shown in brackets) is given in the following table.

Institute Meetings

Board and Committee meetings (including Branch and Group Committees)	80 (78)
Lecture meetings and conferences	27 (28)

Other Meetings

The rooms have also been used by other bodies as follows:

Committee Meetings	19 (26)
Lecture Meetings	12 (3)

In addition, the House has been used on several occasions for social functions, the principal ones being the London and Home Counties Branch "At Home" on October 11th and 12th and the receptions given by the Industrial Radiology Group and the Education Group. Informal dinners took place on four occasions for the Board, the Joint Council of Professional Scientists and the Committee of the London and Home Counties Branch (twice).

Various items for the improvement of the amenities of the House were purchased, primarily from Mr. Whipple's generous donation mentioned in last year's Report. These purchases included high-fidelity sound reproducing equipment to provide music at social functions held in the House. Dr. H. L. Penman kindly presented a number of records to start the collection.

Library Facilities

Members have made considerable use of the facilities available through the Institute for borrowing books from the Science Museum library; there has been little demand for the use of the Joint Library of the Institute and the Physical Society, housed in the Society's rooms in South Kensington.

The selection of newly published books which has been maintained in the Members' Room by H. K. Lewis Ltd., at the invitation of the Board, has been well appreciated by members.

Relations with the American Institute of Physics

The Officers were very glad to welcome Dr. H. A. Barton, Director of the American Institute of Physics, who paid a three-day visit to the Institute's headquarters. A useful exchange of information and views took place; many members were able to meet Dr. Barton and to obtain helpful information from him. The Board much appreciated this personal visit which will help to make even closer the ties between the British and American Institutes.

Visitors from Abroad

The Institute's Officers were glad also to have the opportunity during the year of entertaining a number of overseas members and other scientists who were visiting this country and who called at the Institute's House. Some useful discussions took place with some of the Officers of the Australian Branch during their visits to London.

Conferences

General discussion on Heat Transfer.—The Institute was one of the co-operating bodies with the Institution of Mechanical Engineers and the American Society of Mechanical Engineers in a Conference on Heat Transfer held in London in September.

4th Conference on Industrial Physics.—It was decided to re-commence the series of conferences on industrial physics which had been held before the war and an Organizing Committee under the Chairmanship of Sir Andrew McCance was appointed to organize the fourth of this series in Glasgow in 1952. The subject chosen was "Physics in the Shipbuilding, Transport and Engineering Industries."

Conference on Static Electrification.—In response to requests, the Board agreed to arrange a Conference on static electrification and set up an Organizing Committee under the Chairmanship of Dr. S. Whitehead.

Branch and Group Conferences.—The conferences arranged by the Branches and Groups are reported below.

Physics Abstracts

At the invitation of the Institution of Electrical Engineers' Management Committee of Physics Abstracts, a memorandum summarizing suggestions received from the Branches and Groups for the improvement of *Physics Abstracts* was submitted in January. At the same time, the Board recorded the appreciation of the Institute's members of the great improvement there had already been in respect of coverage, quality and promptness of the Abstracts in the last two years. The Management Committee, in reply, undertook to adopt some of the suggestions as far as they were practicable, and pointed out difficulties in the way of implementing others.

The Board agreed to encourage members to support *Science Abstracts*, both Section A, *Physics Abstracts*, and Section B, *Electrical Engineering Abstracts*, and in this connection Dr. Whitehead contributed a short article to the May issue of the *Bulletin*.

Co-operation with the Physical Society

Informal meetings of some of the Honorary Officers of the Institute and the Physical Society took place in March and July with a view to exploring further means of co-operation. As a result of these discussions, the basis upon which the Society should join in the existing scheme for members of one body to receive publications of another at a reduced rate was agreed.

Arrangements were also made for inviting the members to each others' meetings.

Discussions of other ways and means of co-operation are continuing.

Reciprocal arrangements for the receipt of publications of other bodies at reduced rates

For some years members have had the privilege of receiving the Institution of Electrical Engineers' *Science Abstracts* at reduced rates. This scheme was extended so that members could also receive the *Proceedings* of that Institution for their personal use; in exchange, the Institute's journals were made available to members of the Institution of Electrical Engineers on similar terms.

Arrangements of a like kind were made with the Physical Society, and the other three participating Societies were invited to join in these arrangements on a reciprocal basis. Details of the scheme, which came into force on January 1, 1952, were published in the January 1952 issue of the *Bulletin*.

Annual Conference of Branch and Group Officers

The eighth Annual Conference of Branch and Group Officers was held in the Institute's House on May 16, 1951, the President being in the Chair. A review was given of the Institute's financial position, and there was discussion on various ways in which rapidly rising costs could be met without restricting the services available to members, particularly through the Branches and Groups. A number of recommendations were made to the Board, including a request that consideration be given to arrangements for mutual concessions to members by the Institute and other scientific bodies.

Activities of the Branches and Groups

Australian Branch.—President: Dr. G. H. Briggs succeeded by Professor L. H. Martin. *Honorary Secretary:* Mr. F. J. Lehany succeeded by Professor E. O. Hercus. *Honorary Treasurer:* Mr. A. J. Higgs succeeded by Dr. J. S. Roberts (330 members).

Altogether 40 lecture meetings were held by the different Divisions. A very successful exhibition of scientific instruments and apparatus was held in Melbourne. The display arranged by 42 exhibitors was visited by approximately 4 000 during the four days.

The Branch Committee has given consideration to a proposal that an independent Australian Institute of Physics be established, and the Board of the Institute intimated that if the Australian members supported this proposal, it would welcome this development.

The Branch has been represented on various Australian Committees as follows:

(*a*) National Committee on Illumination: Dr. G. H. Briggs.
(*b*) Australian UNESCO Committee for Science: Dr. G. H. Briggs.
(*c*) Joint Committee of Professional Bodies: Dr. C. E. Eddy.
(*d*) National Association of Testing Authorities: Dr. N. B. Lewis.
(*e*) Delegates to Meeting of A.N.Z.A.A.S., Brisbane: Dr. G. H. Briggs and Professor N. F. Astbury.

Indian Branch.—President: Sir C. V. Raman. *Honorary Secretary:* Dr. H. P. Waran (65 members).

The Committee of the Branch has continued to assist the Membership Committee by advising upon applications received from India.

London and Home Counties Branch.—Chairman: Dr. A. J. Maddock. *Honorary Secretary:* Dr. H. L. Penman succeeded by Mr. B. S. Cooper (1 649 members).

The Branch held six lecture meetings in London and one in Reading. In addition, a Summer Meeting was held at the Cavendish Laboratory, Cambridge. An innovation was the holding of an At Home in the Institute's House in October; this took place on two evenings and was well attended by members and their guests.

Manchester and District Branch.—Chairman: Professor F. A. Vick succeeded by Mr. W. J. Meredith. *Honorary Secretary:* Dr. A. Hargreaves (515 members).

Six lecture meetings were held. A joint meeting of the Branch and the Education Group took the form of a visit to Manchester University Physics Department. A Branch dinner was held in March at which the President, Honorary Treasurer, Honorary Secretary and Secretary of the Institute were present. A visit was also arranged to the physical laboratories of the British Rayon Research Association.

Midland Branch.—Chairman: Dr. D. Parkinson. *Honorary Secretary:* Mr. W. C. Hynd (315 members).

Four lecture meetings were held in Birmingham. Also a joint meeting with the Education Group was held in Birmingham and took the form of a one-day conference on Higher Technological Education and the Teaching of Applied Physics.

Scottish Branch.—Chairman: Professor J. S. Rankin. *Honorary Secretary:* Dr. J. M. A. Lenihan succeeded by Mr. J. McNeill (311 members).

Seven meetings were held in Glasgow, four in Edinburgh, one in Aberdeen and one at St. Andrews. Two series of lecture courses were begun, one of these being restricted in attendance to members.

South Wales Branch.—Chairman: Dr. T. V. I. Starkey. *Honorary Secretary:* Mr. M. R. Hopkins (205 members).

The Branch held three meetings in Cardiff, two in Swansea, one in Aberystwyth and one in Newport.

North Eastern Branch.—Chairman: Mr. H. G. Yates. *Honorary Secretary:* Dr. N. Thorley (120 members).

Six lecture meetings were held in Newcastle and one in Sunderland.

Education Group.—Chairman: Mr. W. Somerville Vernon. *Honorary Secretary:* Dr. J. Topping (235 members).

The Group held meetings in Birmingham (in conjunction with the Midland Branch), Manchester (with the Manchester and District Branch) and one lecture in London. In addition a joint meeting with the Electronics Group was held in Cambridge. A visit was paid to the Royal Naval College, Greenwich, and a three-day conference was held at the Institute's House.

Electronics Group.—Chairman: Mr. H. G. Hughes. *Honorary Secretary:* Mr. G. W. Warren (296 members).

Seven lecture meetings were held in London. The Summer Meeting, arranged jointly with the Education Group, was held in Cambridge.

Electron Microscopy Group.—Chairman: Professor W. T. Astbury. *Honorary Secretary:* Mr. F. W. Cuckow (227 members).

The Group held a two-day conference at the University of St. Andrews.

Industrial Radiology Group.—Chairman: Mr. C. Croxson. *Joint Honorary Secretaries:* Mr. B. N. Clack and Mr. P. Rowbotham succeeded by Mr. R. Meakin (223 members).

Four lecture meetings were held at the Institute's House in addition to a joint meeting with the Institute of X-ray Technology. A three-day Summer Meeting was also held in the Institute's House and an exhibition of apparatus and radiographs was arranged in connection with it. The tenth anniversary of the Group's formation was celebrated by a special lecture meeting dealing with the history and future opportunities of the Group and concluding with a social evening.

Stress Analysis Group.—Chairman: Colonel H. T. Jessop. *Honorary Secretary:* Mr. E. K. Frankl (118 members).

One lecture meeting was held in London, a three-day conference was held at Liverpool University; meetings in connection with visits were held at King's College, Newcastle-upon-Tyne and at the College of Technology, Manchester.

Industrial Spectroscopy Group.—Chairman: Mr. D. M. Smith. *Honorary Secretary:* Mr. K. Dixon succeeded by Mr. J. R. Stansfield (134 members).

One lecture meeting was held in London and one in Glasgow.

X-ray Analysis Group.—Chairman: Dr. W. H. Taylor. *Honorary Secretary:* Mr. A. E. De Barr (320 members).

The usual two conferences were held; the Spring Conference took place at Ashorne Hill, Leamington Spa, and the Autumn Conference in London.

Work on the extension of data for the card index of diffraction data published by the American Society for Testing Materials has continued at the University College, Cardiff.

The Equipment Sub-committee and its Panels have continued their work; a memorandum on the preparation and mounting of polycrystalline specimens for X-ray analysis has been published.

Acknowledgments

Branch and Group Officers.—The Board wishes to record its thanks to those members who have acted as Honorary Officers of the Institute's Branches and Groups and who have thereby contributed greatly to the Institute's activities.

Meeting Rooms and Visits.—The Board records its thanks to the following bodies which have generously allowed meetings of the Institute's Branches and Groups to be held on their premises or which have allowed visits to their laboratories: The Royal Institution; Royal Society of Tropical Medicine and Hygiene; The Institution of Electrical Engineers; The British Iron and Steel Corporation, Ashorne Hill; the Universities of Aberdeen, Birmingham, Cambridge, Durham (King's College, Newcastle-upon-Tyne), Edinburgh, Glasgow, Manchester, Reading, St. Andrews; the University colleges of Aberystwyth, Cardiff, Swansea; Royal Naval College, Greenwich; the Technical Colleges of Newport and Sunderland; The Engineers Club, Manchester; The General Electric Co. Ltd., Birmingham; The British Rayon Research Association, Manchester.

Finance

The 1951 accounts are presented in the same form as that adopted last year. The Institute's own expenditure for the purpose of these accounts is upon items covered by the first of the objects laid down in the Memorandum of Association, namely, "the elevation of the profession of physicist" and the supply of Journals to members in return for part of their subscriptions. The Endowment Trust Fund, it will be

remembered, covers the remaining activities which form the majority of the Institute's work.

For nearly 30 years any surplus on the publications account has been taxed. The Board is glad to be able to record that during the year the protracted negotiations with the Inland Revenue authorities were successfully completed when a ruling was given exempting the Institute's publications from income tax. As reported last year, the position was clarified by transferring the publications account and stock to the Endowment Trust Fund which is recognized as a charity.

After meeting the premium (£985) on the Leasehold Redemption Policy, which is in the nature of an addition to the reserves, providing £469 for writing off the expenditure on the alterations and repairs to the House and allowing £311 for depreciation of the furniture and fittings, the Institute's account shows a small deficit of £93 and the Endowment Trust Fund account a surplus of £934. Early in the year the Finance Committee's view, with which the Board concurred, was that "it was inadvisable at present for the Board to approve any activities beyond those to which it is already committed, should they involve directly or indirectly, additional net expenditure." The correctness of this view will be observed from an examination of the accounts and balance sheets.

The Institute of Physics accounts. Although the income from members' subscriptions at £9,968 showed an increase of £595 on the previous year's figures, entrance and application fees were £218 less. Turning to the expenditure side, it will be noted that the office and general expenses on this account amounted to £8,869, showing an increase of £1,667 over the corresponding total for the previous year. This was largely accounted for by the general rise in costs, including especially that of office printing and stationery, postage and staff salaries and wages. It will be noted that the cost of the journals supplied to members without extra charge has nearly doubled. This cost does not include any contribution towards the type setting and editorial work; the increase is due mainly to the tremendous rise in the cost of paper and postage. Thus nearly 17% of the members' subscriptions was needed in 1951 to provide them with the journals to which they were entitled compared with about 9% the previous year.

The Institute's balance sheet shows a slight reduction in its assets compared with the previous year. The current liabilities of £8,488 include the money held on behalf of the X-ray Analysis Group for the Index (see appendix) and the balance due at the end of the year for transfer from the Institute's account to the Endowment Trust Fund account. Included in "for expenses" are, as usual, the various items belonging to the last quarter of 1951 which were not actually paid or transferred to the other accounts until the turn of the year.

Endowment Trust Fund accounts. These accounts have been prepared along the same lines as last year, save that, since the publications account was transferred to the Trust Fund last year, the publications debtors and creditors and the stock on hand are now included in this balance sheet instead of the Institute's. It will be noted that the year's working of the activities covered by the Fund resulted in a final surplus of £934. At the end of the year the Fund stood at £6,973. The main part of the sundry debtors item of £6,592 is for invoiced subscriptions to the 1952 volumes and that portion of it is, of course, also included on the other side as "Publications subscriptions received in advance."

The Board wishes to record its thanks to those firms who have made further donations to the Fund during the year, and to the Royal Society for a subvention of £500 from the Parliamentary Grant-in-Aid for Scientific Publications.

Benevolent Fund

The normal income from subscriptions and donations (i.e. apart from the generous gift of £500 made last year by Mr. R. S. Whipple) was about the same as last year. Royalties from the sale of books published on behalf of the Institute were £156. The Committee wishes to record its thanks to those who have made donations during the year and to those responsible for the books, the royalties from which the Fund receives. A weekly allowance made to the widow and children of an Associate was continued and an allowance was made to an Associate in indifferent health. A small loan was also made to an Associate to cover an emergency.

While it is very satisfactory to note that the income of the Fund was again more than sufficient to meet the demands made on it during the year, the Fund Committee is doubtful if this position will continue. During the year, therefore, it decided on measures directed towards increasing the income and capital of the Fund so that it may be in a position to give regular help to all deserving cases that might come before it.

APPENDIX

Reports from the Institute's representatives on the work of various Committees during 1951

Parliamentary and Scientific Committee.—The General Committee met nine times during the year, and on eight of these occasions heard addresses on topical subjects which were then discussed. At the other meeting a demonstration of v.h.f. broadcasting and television was staged. The subjects discussed included the progress of atomic energy research and development in Great Britain, the National Research Development Corporation, the Meteorological Office, Higher Technological Education and Ways and Means of overcoming Shortages of essential Raw Materials. A Colonial sub-committee was set up during the year to advise what more could usefully be done to ensure the better application of science and technology in the Colonies.

Members of both Houses who are members of the Committee have used suitable opportunities to ensure that proper regard is had for the scientific point of view.

Joint Council of Professional Scientists.—The Joint Council met in April and November, and under its revised constitution these meetings were primarily for joint consultations between the four constituent professional bodies represented on it. Among the subjects considered were: Press statements regarding scientists and politics, the Ministry of Labour's Report on the supply and demand for the various categories of scientists, status and salaries of science teachers in schools, superannuation schemes for scientists, income tax on members' subscriptions, representation of scientists on Whitley Councils, travel restrictions on scientists, civil defence and scientists. Reports of these exchanges of views were presented by the President to the Board of the Institute on each occasion.

Following an inquiry regarding the interpretation of the regulations concerning publications and extra-mural work of scientists in the colonial service from a senior Fellow of the Institute, which had been referred by the Board to the Joint

Council, correspondence and discussions took place with the Colonial Office. An agreed statement was published in the Institute's *Bulletin* for July and was also published in the corresponding publications of the other constituent bodies and in the technical press.

Science Advisory Committee of Blackburn Technical College.—The Committee received and discussed a report from the Head of the Science Department.

The Committee proposed that a series of lectures on topical and scientific matters should be held in the Science Department, and suggested possible subjects and lecturers.

Applied Science Advisory Committee of the Royal Technical College, Salford.—The Committee held three meetings during the year. The College has pioneered the establishment of courses for National Certificates in Applied Physics in the Manchester area and the enrolment figures show a steady increase.

The importance of carrying technological education beyond the B.Sc. stage was recognized by the College Governors and provision is now being made for a limited programme of physics research.

The Governing Body of Norwood Technical College.—The Governors met on three occasions during the year. The Principal's Report on the session 1950–51 was received with appreciation. The difficulties of recruitment for full-time course were discussed and suggestions for its improvement considered. It was reported that there was a reasonable prospect of the extensions to house the expanding Chemistry, Physics and Telecommunications departments being built in the relatively near future.

National Committee for Crystallography.—The Committee's chief business during the year consisted in preparing for participation in the second General Assembly of the International Union of Crystallography which took place at Stockholm in July. A summary of the principal business transacted at the General Assembly has been published in *Acta Crystallographica*, Vol. 4, p. 567 (November, 1951), from which it will be seen that several members of the Institute have been elected to membership of the various Commissions which carry on the business of the Union between the triennial meetings of the Assembly.

The fortieth anniversary of the discovery of X-ray diffraction falls in 1952, and the National Committee, through the Royal Society, has drawn the attention of the X-ray Analysis Group of the Institute to this fact with the suggestion that the anniversary should be marked in some suitable way.

Joint Committee on Chemical Analysis by X-ray Diffraction Methods.—The Joint Committee of the American Society for Testing Materials, American Crystallographic Association and The Institute of Physics has completed a third supplement, comprising some 900 cards, to the index of X-ray diffraction patterns. The data for these was furnished principally through the Institute's X-ray Analysis Group on whose behalf Dr. A. J. C. Wilson and his assistants at University College, Cardiff, have been working. The fourth and fifth supplements (about 500 cards) have been almost completed. This work is supported by the sale of the copies of the index which are presented to the Institute by the American Society.

British Standards Institution Committees

Instrument Industry Standards Committee.—The Committee held one meeting and reviewed the work of its nine sub-committees dealing with the standardization of certain instruments or parts of instruments and with proposals for new work. The Institute's representative on this committee receives copies of all draft specifications concerning instruments or instrument components, and when there is not a physicist on the drafting committee and it seems desirable, a Fellow who is expert in that subject is invited to comment on the draft.

Technical Committee on the Radiographic Examination of Welded Joints.—A drafting panel, on which three members of the Institute serve, has redrafted techniques for both X-ray and gamma-ray radiography of fusion welds in steel up to 2 in thick.

Technical Committee on Electric Nomenclature and Symbols.—The B.S.I. has been actively pursuing the subject of nomenclature and symbols both on the national and international scale. The revision of B.S. 108, Graphical Symbols, has now been published, and mention may be made of the approval of a colour code for fixed resistors for telecommunication purposes. Of more topical interest is that a communication has been sent to the technical press drawing attention to the summarized recommendations of I.E.C. Technical Committee No. 24 regarding the M.K.S. system of units. When the I.E.C. recommendations have been officially promulgated that fact will be noted by an addendum to B.S. 1637, Memorandum on the M.K.S. System on Electrical and Magnetic Units, but the implementation of these recommendations will mainly depend upon action by professional, learned and educational bodies.

Sub-committee on dimensions of X-ray films.—The Committee met once during the year and the draft revised standard was discussed and most of the clauses agreed upon.

W. E. CURTIS,
President.

E. R. DAVIES,
Honorary Treasurer.

H. R. LANG,
Secretary.

B. P. DUDDING,
Honorary Secretary.

THE INSTITUTE OF PHYSICS

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST DECEMBER, 1951

1950			
£		£	£
	To Office and General Expenses:—		
3,455	Salaries and National Insurance	4,235	
221	Staff Superannuation	280	
1,632	Rent, Rates, Heating, Cleaning, Maintenance, etc.	1,686	
397	Board, Committees' and Officers' Travelling Expenses	552	
804	Printing and Stationery	1,051	
452	Postage and Telephone	642	
241	Miscellaneous Expenses	423	
7,202			8,869
280	„ Depreciation of Furniture and Fittings		311
829	„ Copies of the Journal supplied to Members		1,679
	„ Amount written off Expenditure on Alterations,		
400	Improvements and Adaptation of House		469
985	„ Leasehold Redemption Policy		985
	„ Balance being Excess of Income over Expenditure		
1,417	carried down		—
£11,113			£12,313

1950			
£		£	£
9,373	By Members' Subscriptions		9,968
678	„ Entrance and other fees		460
94	„ Dividends and Interest less Tax		115
	„ Contribution by the Endowment Trust Fund towards		
568	Administration of Educational and Scientific Work		513
100	„ Furniture and Equipment Fund Donations		—
	„ Contribution from Endowment Trust Fund for:		
	Depreciation, Furniture and Fittings	£207	
	Leasehold Redemption Fund	657	
300	Alterations, etc., of Premises	300	
		—	1,164
	„ Balance, being Excess of Expenditure over Income carried down		93
£11,113			£12,313

—	To Balance brought down		93
1,016	„ Balance brought forward from previous year		—
400	„ General Reserve		—
1	„ Balance carried down		—
£1,417			£93

1,417	By Balance brought down		—
—	„ Balance brought forward from previous year		1
—	„ Balance carried down		92
£1,417			£93

BALANCE SHEET, 31ST DECEMBER, 1951

1950		£	£
£			
	LIFE MEMBERSHIP FUND:—		
	As on 31st December, 1950	5,210	
	Less Transfer to Reserve Fund in respect of deceased members	53	
5,210			5,157
	RESERVE FUND:—		
	As on 31st December, 1950	2,079	
	Add Transfer from Life Membership Fund	53	
2,079		2,132	
1	*Less* Income and Expenditure Account (balance)	92	
			2,040
985	SINKING FUND (Leasehold Property)		1,970
	CURRENT LIABILITIES AND PROVISIONS:—		
3,556 (inc. pubs.)	General subscriptions received in advance	476	
3,654	X-Ray Diffraction Index	4,569	
2,489	Endowment Trust Fund	3,289	
2,520	For Expenses	1,765	
—	Balance at Bank overdrawn	383	
			10,482
£20,494			£19,649

W. E. CURTIS,
President.

E. R. DAVIES,
Honorary Treasurer.

1950		£	£
£			
	FIXED ASSETS:—		
	FURNITURE, FITTINGS AND OFFICE EQUIPMENT:—		
	At cost	3,733	
	Additions during the year	416	
		4,149	
2,001	*Less* amounts written off to date	2,044	
			2,105
	ALTERATIONS, IMPROVEMENTS AND ADAPTATION OF PREMISES:—		
	At cost	8,932	
	Additions during the year	457	
		9,389	
7,188	*Less* amounts written off	2,213	
			7,176
	INVESTMENTS:—		
	£500 3% Defence Bonds	500	
	£1,000 3% Savings Bonds, 1960–70	1,000	
	£500 2½% Defence Bonds	500	
	£660 13s. 7d. 3½% Commonwealth of Australia Stock, 1965–69	737	
	£200 Commonwealth of Australia Savings Certificates	156	
	£1,820 3½% Commonwealth of Australia Bonds	1,467	
	£600 3½% Commonwealth of Australia Bonds	480	
	£1,000 3½% Commonwealth of Australia Bonds	800	
4,836			5,640
	(*Estimated market value at 31st December*, 1951, £5,157.)		
985	SINKING FUND: Leasehold Redemption Policy		1,970
	CURRENT ASSETS:—		
376	STOCK ON HAND—Stationery	634	
1,789	SUNDRY DEBTORS	246	
212	SUBSCRIPTIONS DUE	244	
2,264	BALANCE AT BANK—Current Account	—	
5	Deposit Account	1,027	
774	In Australia	574	
64	CASH IN HAND	33	
			2,758
£20,494			£19,649

Report of the Auditors to the Members of The Institute of Physics

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit. In our opinion proper books of account have been kept by the Institute, so far as appears from our examination of those books and proper returns adequate for the purposes of our audit have been received from branches of the Institute not visited by us.

We have examined the above Balance Sheet and annexed Income and Expenditure Account which are in agreement with the books of the Institute.

In our opinion and to the best of our information and according to the explanations given to us the said accounts give the information required by the Companies Act, 1948, in the manner so required and the Balance Sheet gives a true and fair view of the state of the Institute's affairs as at 31st December, 1951, and the Income and Expenditure Account gives a true and fair view of the excess of expenditure over income for the year ended on that date.

Spencer House, South Place, London, E.C.2.
20th February, 1952.

KNOX, CROPPER & Co., *Chartered Accountants.*

THE INSTITUTE OF PHYSICS ENDOWMENT TRUST FUND

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST DECEMBER, 1951

1950			1950		
£		£	£		£
171	To Laboratory Arts and National Certificate Examinations ..	209	131	By Fees for Laboratory Arts and National Certificates	206
1,396	,, Expenses of Branches and Groups	1,385	411	,, Donations	366
145	,, Conference Expenses	50	49	,, Interest	49
120	,, Educational Booklets and Reports	90	—	,, Income Tax Recovered	51
14,572	,, Production and Distribution of Publications	19,119	15,419	,, Receipts from publications	21,870
5	,, Professional Charges	10	500	,, Scientific publications Grant (per Royal Society)	500
300	,, Contribution to cost of repairs and alteration of house, amount written off	300	767	,, Balance carried to Endowment Trust Fund	—
	,, Contribution to Depreciation of Furniture and Leasehold Redemption Fund	432			
	,, Proportion of overhead charges in connection with the work				
568	carried on by the Trust	513			
—	,, Balance carried to Endowment Trust Fund	934			
£17,277		£23,042	£17,277		£23,042

BALANCE SHEET, 31ST DECEMBER, 1951

	£	£		£	£
ENDOWMENT TRUST FUND:—			INVESTMENTS:—		
As on 31st December, 1950	6,039		£400 3% Savings Bonds, 1965–75	400	
Add Transfer from Income and Expenditure Account ..	934		£1,500 2½% Defence Bonds	1,500	
		6,973			1,900
CURRENT LIABILITIES AND PROVISIONS:—			(*Market Value at 31st December, 1951, £1,837.*)		
Publications Subscriptions received in advance	9,374		PROPORTION OF ALTERATIONS, ETC., OF PREMISES:—		
Printing and Publishing Expenses	1,761		Payable by the Trust Fund as on 31st December, 1950	600	
		11,135	*Less* amount written off this year	300	
					300
			STOCK ON HAND:—Publications and Dispatch		3,707
W. E. CURTIS,			SUNDRY DEBTORS:—Publications		6,592
President.			DUE FROM THE INSTITUTE OF PHYSICS		3,289
			CASH AT BANK		2,320
E. R. DAVIES,					
Honorary Treasurer					
		£18,108			£18,108

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. We have verified the Bank balances and the investments. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Fund according to the best of our information and the explanations given to us and as shown by the books of the Fund.

Spencer House, South Place, London, E.C.2.
20th February, 1952.

KNOX, CROPPER & CO., *Chartered Accountants.*

THE INSTITUTE OF PHYSICS BENEVOLENT FUND

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST DECEMBER, 1951

1950		£	1950		£
£			£		
289	To Grants	352	976	By Subscriptions and Donations	461
744	„ Balance carried to Capital Account	307	44	„ Interest	42
			13	„ Royalties on Books	156
£1,033		£659	£1,033		£659

BALANCE SHEET, 31ST DECEMBER, 1951

	£	£		£	£
CAPITAL ACCOUNT:—			INVESTMENTS at cost:—		
On 31st December, 1950	2,007		£350 3½% War Stock	350	
Add Transfer from Income and Expenditure Account	307		£750 4% Consols	832	
		2,314	£500 3% Savings Bonds, 1955–65	496	
			(*Market Value on 31st December, 1951, £1,413.*)		
				—	1,678
E. R. DAVIES,			CASH on Deposit at Post Office Savings Bank		60
Chairman of the Fund Committee.			INSTITUTE OF PHYSICS		458
H. R. LANG,			CASH AT BANK		118
Secretary to the Fund Committee.					
		£2,314			£2,314

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. We have verified the Bank balances and the investments. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Fund according to the best of our information and the explanations given to us and as shown by the books of the Fund.

Spencer House, South Place, London, E.C.2.
20th February, 1952.

KNOX, CROPPER & CO., *Chartered Accountants*

NOTICES TO MEMBERS

Members' Copies of Journals

The cost of journals to which members are entitled without additional charge or at privileged rates has risen rapidly in the past year and now represents a substantial part of the subscription paid. The Institute is able to give this privilege to members only because and so long as the sale of its journals at the full retail rate is high and increasing. Members are urged, therefore, not to permit the use of their personal copies of journals in the libraries of organizations with which they are connected. From next month onwards, all copies of journals supplied to members without additional payment or at privileged rates will be clearly marked "Member's copy."

Notes on the Preparation of Papers

A revised and enlarged edition of the booklet *Notes on the Preparation of Contributions to the Institute's Journals and Other Publications* is now available. These notes, first issued in 1931, are intended to assist less experienced authors and to serve as a reference book for all who contribute to the Institute's publications. Apart from the special information concerning these publications the notes deal with the preparation, length and cost of publishing papers, the form of script and diagrams required, the setting out of tables and mathematics, and the correction of proofs. A short bibliography of dictionaries and books on writing is included. The appendix contains notes and examples of spellings, symbols and abbreviations, the Greek alphabet (so often unrecognizably written in scripts) and printers' marks for correcting proofs.

In these days of mounting costs it is necessary to remind authors (as the notes do) that the cost of a page of one of the journals is as much as £10, that the typical minor change to a line of type once it is set may be 5s. or more, and that even such a simple matter as removing a comma costs about 1s. 6d.

Members who have earlier editions of the *Notes* are invited to obtain a copy of the new one, since a number of minor changes in acceptable spellings and abbreviations, etc., have been made to conform more with new international and other agreements.

Copies of the booklet (price 2s. 6d.) may be obtained from the Secretary.

Counter Spectrometers for the Investigation of Debye–Scherrer patterns

The Equipment Sub-Committee of the X-ray Analysis Group of the Institute announce that a memorandum comprising notes on the design of counter spectrometers for the investigation of Debye-Scherrer patterns has been prepared for the powder camera and Geiger–Muller counter spectrometer panel. Copies may be obtained (free of charge) from the Secretary of the Institute.

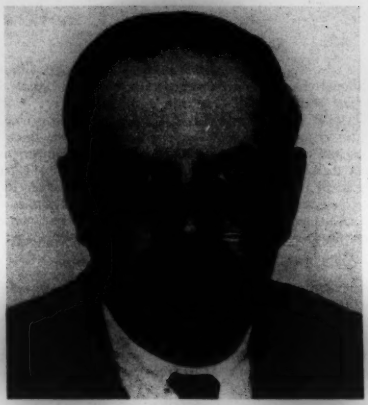
MEMBERS OF NOTE

Frank Twyman, F.R.S. Mr. Twyman, now seventy-five years old, was born in Canterbury, where he received his early education. In 1892–3 he studied electrical engineering at the Finsbury Technical College and, holding a Siemens Scholarship, at the Central Technical College, South Kensington, until 1896. After a little less than two years with a cable manufacturing company he became scientific assistant to Mr. Otto Hilger early in 1898. At that time the firm, founded by the brothers Adam and Otto Hilger, employed only twelve men, and the work consisted chiefly of the manufacture of a simple table spectrometer or of more elaborate spectrometers specially designed for various amateur and professional scientific men. On the death of Otto Hilger in 1902, Mr. Twyman became Manager and in 1904, when the business became a Company, Managing Director. The firm had begun to specialize on the manufacture of high quality instruments, particularly interferometers, and the contribution which Mr. Twyman personally made to the development and production of these instruments gave him a world-wide reputation. He was elected to Fellowship of the Royal Society in 1926, and in the same year received the John Price Wetherell medal of the Franklin Institute of America and the Duddell medal of the Physical Society. As long ago as 1904 he had designed the first wavelength spectrometer, and about 1910 he designed and placed on the market the first fixed adjustment quartz spectrograph. To him, probably more than to anyone else, industry owes the introduction of instruments which make possible the methods of spectrochemical analysis nowadays so widely used. In 1946 Mr. Twyman resigned from the Managing Directorship of Hilgers but retained the position of Technical Adviser to the firm and later to the amalgamated firm of Hilger and Watts, which position he still holds.

Mr. Twyman has published three books, *Spectrochemical Analysis of Metals and Alloys*, *Prism and Lens Making* and *Metal Spectroscopy*, and has contributed many papers on optics and spectrochemical analysis to the technical journals.

A founder Fellow of The Institute of Physics, Mr. Twyman served on the Board from 1925–29, 1930–33 and, as a Vice-President, 1936–40. He has this year become Chairman of the Advisory Committee of the *Journal of Scientific Instruments*. In 1930 and 1931 he was President of the Optical Society. He has always had a great interest in the education and training of scientists and technicians, particularly in the acquisition of manual skills, and has been a valued member of the Institute's Education Committee.

Thomas Clews Keeley, C.B.E., M.A. Born near Birmingham in 1894 and educated at St. John's College, Cambridge, Mr. Keeley has spent the whole of his professional life in the University of Oxford with the exception of a short period at the Royal Aircraft Factory (later Establishment) at Farnborough towards the end of the 1914–18 war. He went to the Clarendon Laboratory, Oxford, in 1919 as Research Assistant to Professor Lindemann (now Lord Cherwell) and in 1927 was appointed University Demonstrator in Physics. In 1924 he was elected to a Fellowship at Wadham College of which he is now Sub-Warden and Senior Tutor. For the whole of the second World War, when Lord Cherwell was a member of Mr. Churchill's personal staff, Mr. Keeley was Deputy Professor. He has resumed this responsibility since October last when Lord Cherwell became a member of Mr. Churchill's Cabinet. Since 1939 Mr. Keeley has been Director of the Clarendon Laboratory. In 1944 he received the C.B.E.



A Fellow of The Institute of Physics since 1943, Mr. Keeley was elected to the Board in 1949; he is a member of the Education Committee and of the Membership Committee.

THE REGISTER

ELECTIONS TO MEMBERSHIP

An asterisk (*) indicates transfer from another grade.

Fellows

*Andrew, Edward Raymond, M.A., Ph.D., F.R.S.E., Lecturer in Natural Philosophy, University of St. Andrews.

Dunn, Reginald William, B.A., Chief Engineer, Kelvin and Hughes Ltd., Basingstoke.

*Heller, Douglas Max, B.Sc., A.R.C.S., Chief Engineer, Commercial Engineering Dept., Bendix Radio, Baltimore, U.S.A.

*Herne, Howard James Louis, M.A., Head of Physics Division, Research Association of British Rubber Manufacturers, Croydon.

Richardson, Edward Gick, B.A., Ph.D., D.Sc., Reader in Physics, King's College, Newcastle-upon-Tyne.

*Thomas, William John, B.Sc., Ph.D., Principal, Norwood Technical College, London.

Rogers, Donald, B.Sc., Ph.D., Imperial Chemical Industries Ltd. Research Fellow, University of Wales.

Associates

Blackman, William Denis Hammond, B.Sc., Lecturer, Military College of Science, Shrivenham.

Bullerwell, William, B.Sc., Ph.D., Geologist, Geological Survey and Museum, London.

Churchill, John Leslie Weston, B.Sc., Research Physicist, Associated Electrical Industries Ltd., Aldermaston.

*Dutton, Jack, B.Sc., Ph.D., Demonstrator in Physics, University College of Swansea.

Exley, Kenneth Dawson, B.Sc., Senior Physics Master, Wallasey Grammar School.

Hambling, Peter Gordon, B.Sc., Research Student, University of Reading.

Hart, Royston Charles, M.Sc., Scientific Staff, General Electric Co. Ltd., Wembley.

Haydon, Sydney Charles, M.A., Research Student, University College of Swansea.

Hurst, John, B.Sc., Lecturer in Physics, Royal Technical College, Salford.

Kerridge, Maurice, M.A., Physicist, Associated Electrical Industries Ltd., Aldermaston.

Lancaster, John Keith, B.Sc., Physicist, Associated Electrical Industries Ltd., Aldermaston.

Lovering, Edgar Lockhart, B.Sc., Senior Physics Master, The Grammar School, Lyme Regis.

Laverick, Elizabeth, B.Sc., Ph.D., Research Physicist, General Electric Co. Ltd., Stanmore.

*Martin, Richard Geoffrey, M.A., Research Physicist, "Shell" Refining and Marketing Co. Ltd., Chester.

*Morgan, Colyn Grey, M.Sc., Research Scholar, University College of Swansea.

Mukherjee, Sourindra Mohan, M.Sc., Ph.D., Research Physicist, Indian Jute Mills Association Research Institute, Calcutta.

*Osborne, Basil Whitworth, M.Sc., Scientific Officer, National Physical Laboratory.

*Palmer, Peter Jack, M.Sc., A.R.C.S., D.I.C., Lecturer in Civil Engineering, University of Birmingham.

Parry, Frederick, B.Sc., Lecturer in Physics, Dudley and Staffordshire Technical College.

Phipps, Leslie Walter, B.Sc., Scientific Officer, Clothing Equipment and Physiological Research Establishment, Ministry of Supply, Farnborough.

Smith, Bernard Owen, B.Sc., Scientific Officer, British Iron and Steel Research Association, London.

Smith, John Bruce, B.Sc., Senior Electronic Engineer, Electric and Musical Industries Ltd., Hayes.

Stephenson, Sydney Kenneth, B.Sc., Senior Assistant Physicist, Christie Hospital and Holt Radium Institute, Manchester.

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